

CLAIMS

1. A communication method of performing a wireless communication operation in a network including a plurality of communication stations having no relation of a control station and a controlled station, comprising the steps of:

transmitting from a communication station a beacon in which information with respect to the network is written; and

setting by the communication station a state in which a reception operation is performed during a period of time before and after the transmission of said beacon signal.

2. A communication method according to claim 1,

wherein said beacon signal is a signal periodically transmitted from a communication station in an active state in the network.

3. A communication method according to claim 2,

wherein each communication station changes over a plurality of transmission active levels or a plurality of reception active levels in accordance with presence or absence of transmission data or a request for active level change from a communication partner.

4. A communication method according to claim 2, further comprising the step of:

setting a state in which a reception operation is performed over a beacon signal transmission interval in predetermined cycles.

5. A communication method according to claim 1, further comprising the step of:

setting by said communication station a state in which a reception operation is performed during a period of time in which a beacon signal is transmitted by a partner station having a possibility of generating data to be transmitted and during a neighboring period of time thereof.

6. A communication method according to claim 1, further comprising the steps of:

exchanging by said communication station messages in order to transmit data with a communication station to which data should be transmitted when the data to be transmitted is generated; and

setting by said communication station a state in which a reception operation is performed during a period of time in which said communication partner station transmits a beacon signal and during a neighboring period of time thereof.

7. A communication method according to claim 2, further comprising the steps of:

generating at least one transmission trigger time between beacon signal transmission intervals, and

starting a procedure of transmission or reception based on said transmission trigger time.

8. A communication method according to claim 1, further comprising the steps of:

exchanging by said communication station messages in order to transmit data with a communication station to which data should be transmitted when the data to be transmitted is generated;

setting by said communication station a state in which a reception operation is performed during a period of time in which said communication partner station transmits a beacon signal and during a neighboring period of time thereof;

judging by said communication station whether volume of data to be transmitted which is retained in a transmission station increases; and

generating at least one transmission trigger time between beacon signal transmission intervals when the volume of data to be transmitted which is retained in the transmission station increases,

wherein a transmission and reception procedure is started based on said transmission trigger time when the data to be transmitted exists in the transmission station.

9. A communication method according to claim 8,

wherein said communication station continuously performs reception operation or transmission operation when it is judged that the volume of data to be transmitted further increases.

10. A communication method according to claim 1,
wherein said information with respect to the network written in the beacon signal is communication state information of a communication station capable of performing communication within said network, and the communication station retains said communication state information.

11. A communication method according to claim 10,
wherein said retained communication state information is changed in accordance with presence or absence of transmission data or received communication state change request information.

12. A communication method according to claim 1, further comprising the steps of:

informing from a communication station transmitting broadcast information to each communication station recognized that transmission and reception is directly performed therefrom, that the communication station is in a state in which a reception operation is performed during a period of time in which a communication partner station transmits a beacon signal and also during a neighboring period of time thereof; and
transmitting said broadcast information.

13. A communication method according to claim 12,
wherein said broadcast information is transmitted by a
beacon signal or a packet which follows the beacon signal.

14. A communication method according to claim 12,
wherein communication state information on a communication
station capable of performing communication in said network is
retained as a list and the retained status is changed based on a
transmitted change notice.

15. A communication method according to claim 12,
wherein a reception state thereof or a status with respect
to a reception state is informed by a beacon signal.

16. A communication apparatus which operates in a network
built under a wireless communication environment of an
autonomous distributed type, comprising:

communication means for transmitting and receiving wireless
data;

beacon generation means for generating a beacon signal in
which information with respect to the network is written to be
transmitted by said communication means; and

control means for setting a state in which a reception
operation is performed during periods of time before and after
the transmission of the beacon signal generated by said beacon
generation means.

17. A communication apparatus according to claim 16,
wherein the beacon signal generated and transmitted by said beacon generation means is a signal periodically transmitted when the communication apparatus is in an active state.

18. A communication apparatus according to claim 17,
wherein said control means changes over a plurality of transmission active levels or a plurality of reception active levels in accordance with presence or absence of transmission data or a request for active level change from a communication partner.

19. A communication apparatus according to claim 17,
wherein said control means further sets a state in which a reception operation is performed by said communication means over a beacon signal transmission interval in predetermined cycles.

20. A communication apparatus according to claim 16,
wherein said control means sets a state in which a reception operation is performed by said communication means during a period of time in which a communication partner having a possibility of generating data to be transmitted transmits a beacon signal and during a neighboring period of time thereof.

21. A communication apparatus according to claim 16,

wherein said control means controls an exchange of messages in order to transmit data with a communication partner to whom data should be transmitted when the data to be transmitted is generated, and sets a state in which a reception operation is performed by said communication means during a period of time in which said communication partner transmits a beacon signal and during a neighboring period of time thereof.

22. A communication apparatus according to claim 17,
wherein said control means generates at least one transmission trigger time between beacon signal transmission intervals, and starts a procedure of transmission or reception in said communication means based on said transmission trigger time.

23. A communication apparatus according to claim 16,
wherein said control means controls an exchange of messages in order to transmit data with a communication partner to whom the data should be transmitted when the data to be transmitted is generated; performs a reception operation by said communication means during a period of time in which said communication partner transmits a beacon signal and during a neighboring period of time thereof; judges whether the retained volume of data to be transmitted increases; generates at least one transmission trigger time between beacon signal transmission intervals when the volume of data to be transmitted increases,

and starts transmission and reception in said communication means based on the transmission trigger time.

24. A communication apparatus according to claim 23,
wherein said control means makes reception operation or transmission operation continuously performed by said communication means when it is judged that the volume of data to be transmitted further increases.

25. A communication apparatus according to claim 16,
wherein information with respect to the network written in said beacon signal is communication state information on a communication apparatus capable of performing communication in said network, and
said control means retains said communication state information written in said beacon signal received by said communication means.

26. A communication apparatus according to claim 16,
wherein said control means changes said retained communication state information in accordance with presence or absence of transmission data or received communication state change information.

27. A communication apparatus according to claim 16,
wherein the control means informs each communication apparatus recognized to perform transmission and reception

directly with the relevant communication apparatus, that the communication apparatus is in a state in which a reception operation is performed during a period of time in which a communication partner transmits a beacon signal and during a neighboring period of time thereof when broadcast information is transmitted from said communication means.

28. A communication apparatus according to claim 27, wherein said broadcast information is transmitted in a beacon signal or a packet that follows the beacon signal.

29. A communication apparatus according to claim 27, wherein said control means retains, as a list, communication state information on a communication apparatus capable of performing communication in the network, and changes the retained status based on a change notice received by said communication means.

30. A communication apparatus according to claim 27, wherein said control means adds a reception state thereof or a status with respect to the reception state to the beacon signal generated by said beacon generation means to be transmitted from said communication means.

31. A computer program in which processing of performing access control not to make communication timing of a packet collide with that of another station by detecting a signal

transmitted from another station in a network including a plurality of communication stations is written in a computer readable form so that the program is executed on a computer system, comprising the steps of:

transmitting a beacon in which information with respect to the network is written; and

setting a state in which a reception operation is performed during periods of time before and after the transmission of said beacon signal.